

WHAT IS CLAIMED IS:

1. Catalysts for oxychlorination of ethylene to 1,2-dichloroethane, comprising compounds of copper and magnesium supported on alumina, in  
5 which copper, expressed as metal, is present in an amount of 7 to 12% by weight and the Mg/Cu ratio is from 0.05 to 1, wherein the distribution of copper in the particle of the catalyst is such that the X/Y ratio between the concentration of the copper atoms at the surface provided by the Al/Cu ratio (X) at the surface (layer of 20-30Å) and the concentration given by the  
10 Al/Cu ratio (Y) in the entire particle is from 0.8 to 1.3.
2. The catalysts according to claim 1, wherein the copper compound is cupric chloride and the magnesium compound is magnesium chloride.
3. The catalysts according to claim 1, wherein the copper content is 9-12% by weight and the Mg/Cu ratio is 0.1 - 0.5.
- 15 4. The catalysts according to claim 1, having a surface area of 60 to 150 m<sup>2</sup>/g.
5. The catalysts according to claim 1, comprising alkali metal compounds as promoters.
6. The catalysts according to claim 1 supported on gamma alumina.
- 20 7. A method for preparing the catalysts according to claim 1, comprising the impregnation of the alumina in more steps, wherein the first step uses volumes of aqueous solution of the Cu and Mg compounds that are equal to, or lower than, the volume of the pores of the alumina, and the subsequent steps use volumes that gradually decrease with respect to the  
25 volume used in the first step.
8. The method according to claim 7, wherein the impregnated powder is dried before each impregnation step.
9. A process for the oxychlorination of ethylene to 1,2-dichloroethane, which uses the catalyst according to claim 1, working in a  
30 fluidized bed at temperatures from 190 to 235 °C, using oxygen as an

oxidizing agent and with reaction  $\text{Cl}/\text{C}$  molar ratios of 0.6-0.7 and reaction  $\text{O}_2/\text{C}_2\text{H}_4$  molar ratios of 0.4-0.5.